

REMARKS:

- 1) All prior claims 1 to 34 have been canceled. New claims 35 to 52 have been submitted. In accordance with the PCT procedures, the prior original claims of this application were a direct literal translation of the foreign-language PCT claims of the counterpart PCT International Application. The new claims 35 to 52 have been drafted "from the ground up" as a fresh approach at covering inventive subject matter, with a different claim style and format in view of typical US claiming practices, in comparison to the original translated PCT claims. The new claims are based on and supported by features from the original claims and original disclosure as shown in the following table, and do not introduce any new matter. Entry and consideration of the new claims are respectfully requested.

new claims	35	36	37	38	39	40
original support	CI 1, 16, 18; P 3 L 3-26, P 6 L 15- P 7 L 20, P 8 L 8- P 9 L 17; Figs. 1, 2	P 7 L 11-14	Figs. 1, 3; P 9 L 18- P 11 L 7	CI 26; P 9 L 12-17 P 10 L 15-19; Figs. 1, 3	P 9 L 1-6	CI 17; Figs. 1, 2

new claims	41	42	43	44	45	46
original support	CI 19	CI 20	CI 21	CI 22; Fig. 2	CI 23	CI 29

new claims	47	48	49	50	51	52
original support	CI 30	CI 31	Figs. 1, 3; P 10 L 3- P 11 L 7; CI 26	CI 26; P 9 L 18- P 11 L 7	CI 27	CI 28

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- 2) Referring to page 3 of the Office Action, the rejection of claims 32 to 34 as anticipated by US Patent 847,768 (Hartman) has been obviated by the present amendment. Claims 32 to 34 have been canceled. The mounting device alone is not being pursued in the present new claims. Instead, new claims 50 to 52 are directed to a combination of the turbomachine according to claim 49 (which depends from claim 35), and a mounting tool adapted to carry out an alignment or adjustment of guide pins of the turbomachine. Thus, claims 50 to 52 do not merely recite "intended use limitations" as asserted by the Examiner regarding prior claims 32 to 34. Instead, claims 50 to 55 are expressly and concretely limited to a combination of the recited mounting tool with the recited turbomachine, and the particular arrangement and interaction thereof. Hartman does not disclose a turbomachine of any kind, or particularly a turbomachine with features according to present new claims 35 and 49 (as will be discussed below). Therefore, Hartman does not anticipate present claims 50 to 52 depending from claim 49. Please withdraw this anticipation rejection applying Hartman.
- 3) Referring to pages 4 and 5 of the Office Action, the rejection of claims 1, 16 to 21 and 29 to 31 as obvious over US Patent 3,841,787 (Scalzo) further in view of US Patent 7,234,920 (Imbourg et al.) and US Patent 7,070,387 (Crozet et al.) is respectfully traversed.

New independent claim 35 is directed to a turbomachine comprising a housing that includes a frustoconical sloping housing portion, a rotor that includes rotor blades rotatably

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supported within the sloping housing portion, a stator ring that includes stator guide vanes arranged in the sloping housing portion adjacent to the rotor blades, and a spoke/centering arrangement that is arranged and adapted to adjustably support the stator ring relative to the housing and to spoke-center the stator ring about the axis of the turbomachine. The spoke-centering arrangement comprises at least three guide pins distributed circumferentially about a circumference of the sloping housing portion, and at least three fork-shaped elements distributed circumferentially about a circumference of the stator ring. Each guide pin extends longitudinally at a slant relative to an axial direction and relative to a radial direction of the turbomachine, through a respective through-hole in the sloping housing portion so that a free end of the guide pin protrudes inwardly into the space within the sloping housing portion. Each fork-shaped element is connected to the stator ring and defines a first slot recess between a pair of fork walls of the fork-shaped element. This first slot recess of the fork-shaped element is at least partly open in the radial direction and in the axial direction, and is bounded between the pair of fork walls in the circumferential direction. The free end of one of the guide pins respectively engages into the first slot recess of a respective associated one of the fork-shaped elements, such that the free end of the guide pin is constrained in the circumferential direction between the fork walls, while allowing at least a limited relative motion between the guide pin and the associated fork-shaped element in the radial direction and in the

axial direction in which the first slot recess is at least partly open.

Thus, the claimed arrangement aligns and holds the stator ring in a spoke-centered manner via the engagement of the guide pins (connected to the sloping housing portion) into the first slot recesses of the fork-shaped elements (connected to the stator ring). This arrangement also allows at least a limited relative motion in the radial direction and in the axial direction, between the fork-shaped elements and the guide pins, and thus between the stator ring and the sloping housing portion. This facilitates assembly and disassembly of the stator ring in the turbomachine. This also achieves the required spoke-centering while permitting and compensating thermal expansion differences of the stator ring relative to the housing in the radial direction. This further maintains the required centering of the stator ring and also the required alignment of the stator ring in the circumferential direction. The prior art does not disclose and would not have suggested such a combination of features.

Scalzo discloses a turbomachine including rotor blades (20) rotatably supported in a stator housing (14), and stator vanes (24) grouped in vane segments (23) that are mounted in the housing (14) by an arrangement including a vane segment lock pin (54) by which each vane segment (23) is fixedly attached to the stator housing (14) (Fig. 4, col. 4 lines 51 to 67). The vane segment lock pin (54) is a generally cylindrical pin but includes machined flats (55) that register with mating slots (60) in the

radially outer portion of the shroud member (34) which carries the integral vane segments (23) including plural vanes (24) (col. 3 lines 11 to 19, Fig. 4, Fig. 5). The lock pin (54) is rotated so as to orient the flats (55) with respect to the slots (60) so as to adjust or control the degree of contact pressure or stress therebetween (col. 4 line 58 to col. 5 line 2). Thereby, the vane segment (23) is fixedly locked to the casing or housing (14) (col. 4 line 51 to 67).

The above described structure of Scalzo does not include plural fork-shaped elements connected to the stator ring and respectively each defining a first slot recess between a pair of fork walls such that this first slot recess is at least partly open in the radial and axial directions but bounded between the pair of fork walls in the circumferential direction. Instead, the outer shroud portion (34) has a track and channel arrangement that suspends and supports the vane segments (23). The track and channel arrangement involves circumferentially extending grooves or channels that engage with circumferentially extending track rails, which allow circumferential rotational sliding or shifting of the vane segments (23) and tilting of the vane segments into position during assembly of the stator arrangement (col. 3 line 11 to col. 4 line 50). Then, the vane segments (23) are locked in place relative to the housing (14) by installing, appropriately rotating, and then securing the vane segment lock pins (54) (col. 4 line 51 to col. 5 line 2).

Thus, the structure taught by Scalzo is significantly different from, and substantially the opposite of, the presently claimed structure. Particularly, the alleged guide pins of

Scalzo are not engaged into recesses of fork-shaped elements while being constrained in the circumferential direction between fork walls, yet allowing a limited relative motion between the guide pin and the fork-shaped element in the radial and axial directions. To the contrary, in the Scalzo arrangement, the stator vane segments are held in the axial and radial directions by the track and channel assembly, and then are locked in the circumferential direction by the guide pins (54).

Furthermore, as acknowledged by the Examiner, the guide pins of Scalzo extend radially, and are thus not slanted relative to the radial direction and the axial direction of the turbomachine. In this regard, the Examiner has referred to Imbourg et al. and Crozet et al. for showing that a turbomachine with a sloping housing portion, and blade-securing members arranged in this sloping housing portion, are known. However, in both of these references the alleged pin elements (28) actually serve to rigidly fix and secure the guide vane segments (for example see col. 4 lines 11 to 67 of Imbourg et al., and see col. 2 lines 15 to 35 of Crozet et al.). Also, both Imbourg et al. and Crozet et al. provide a circumferentially extending groove or channel formed by the suspension hooks, into which the guide vane segments may be tilted and circumferentially slidingly adjusted for assembly of the stator arrangement. The alleged guide pins then fix, fasten or lock the arrangement in the assembled position. As discussed above with regard to Scalzo, that is significantly different from the present invention.

Thus, even a combined consideration of Imbourg et al. and Crozet et al. together with the teachings of Scalzo as discussed above would not have suggested the present invention. Namely, even if the alleged adjusting pins of Scalzo or of Imbourg et al. or Crozet et al. would have been arranged to extend perpendicularly through a sloping housing portion according to Imbourg et al. or Crozet et al., the result still would not have suggested the distinct features recited in at least the last two paragraphs of claim 35 and discussed above.

All of the dependent claims 36 to 52 are patentable over the prior art already due to their dependence from claim 35. Moreover, the dependent claims recite additional features that further distinguish the invention over the prior art, and the Examiner is respectfully requested to consider the further features as well.

For the above reasons, the Examiner is respectfully requested to withdraw the obviousness rejection applying Scalzo.

- 4) Referring to pages 5 and 6 of the Office Action, the rejection of claims 1, 16, 17, 19 to 23 and 29 to 31 as obvious over US Patent 3,365,173 (Lynch et al.) further in view of Imbourg et al. and Crozet et al. is respectfully traversed.

Significant features of present independent claim 35 have been discussed above. Lynch et al. do not disclose and would not have suggested such a combination of features.

Lynch et al. disclose a turbomachine stator structure in which guide vane segments (20) can be hooked onto a housing, tilted into position, and then secured in place by a mounting

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arrangement that includes a circumferentially extending track and channel structure (see Figs. 2, 3, 4, 5, 6 and 7, as well as col. 3 lines 3 to 57). The rails (40, 42) allow circumferential sliding of the guide vane segments (20), but the circumferential rail (42) has a recess (52) therein, and the square head (54) of a stop bolt (50) protrudes into the recess (52) of the circumferential rail (42) and is secured by a nut (56) in order to fix the guide vane segment in the circumferential direction (Figs. 2, 6 and 7, and col. 3 lines 58 to 75). Thereby, each vane segment is now located radially, axially and circumferentially (col. 3 line 70), while the engagement of the slots (32, 46) of the forward rail of the vane segment and the forward ring of the housing provided only a loose fit. The installed shroud members then form a snug fit and lock the guide vane segments into place (col. 4 lines 58 to 65). Thus, the arrangement of Lynch does not correspond to or suggest the presently claimed arrangement of the guide pins and fork-shaped elements as defined in claim 35 and discussed above.

Moreover, the Examiner has acknowledged that Lynch et al. do not disclose guide pins extending at a slant relative to the radial and axial directions, but instead the locking pins or bolts of Lynch et al. extend radially. In this regard the Examiner has cited Imbourg et al. and Crozet et al. for evidence of slanting pins extending through a sloping housing wall. However, for the reasons discussed above, the arrangements of Imbourg et al. and Crozet et al. would not have suggested the presently claimed arrangement and cooperation of the guide pins and the fork-shaped elements. Thus, even a combined

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consideration of Imbourg et al. and Crozet et al. with Lynch et al. would not have made the present invention obvious.

The dependent claims are patentable already due to their dependence, but also cite additional features that further distinguish the invention over the prior art.

For the above reasons, the Examiner is respectfully requested to withdraw the obviousness rejection applying Lynch et al. in view of Imbourg et al. and Crozet et al.

- 5) Referring to pages 6 and 7 of the Office Action, the rejection of claims 26 to 28 as obvious over Lynch et al. in view of Hartman is respectfully traversed. New claims 50 to 52 are directed to a combination of the turbomachine according to claim 49 (which depends from claim 35) and a mounting tool for carrying out an alignment or adjustment of the guide pins of the turbomachine. For the reasons discussed above, the turbomachine would not have been obvious from Lynch et al. Hartman does not disclose anything about an arrangement of guide pins and fork-shaped elements in a turbomachine. Therefore, even a combined consideration of Lynch et al. and Hartman would not have suggested the presently claimed combination of a specialized mounting tool and the turbomachine as discussed above. The Examiner is respectfully requested to withdraw the obviousness rejection applying Lynch et al. in view of Hartman.
- 6) The additional prior art made of record requires no particular comments because it has not been applied against the claims.

- 7) Favorable reconsideration and allowance of the application, including all present claims 35 to 52, are respectfully requested.

Respectfully submitted,

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Enclosures:  
Transmittal Cover Sheet  
Term Extension Request  
Form PTO-2038

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